

# Sulfometuron-methyl

## HERBICIDE FACT SHEET

U.S. DEPARTMENT OF ENERGY  
BONNEVILLE POWER ADMINISTRATION

This fact sheet is one of a series issued by the Bonneville Power Administration for their workers and the general public. It provides information on forest and land management uses, environmental and human health effects, and safety precautions. A list of definitions is included in Section VIII of this fact sheet.

### I. BASIC INFORMATION

**COMMON NAME:** sulfometuron-methyl

**CHEMICAL NAME:** {Methyl 2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]-carbonyl]amino]sulfonyl]benzoate}

Cas No. 74222-97-2

**CHEMICAL TYPE:** sulfonyleurea herbicide

**PESTICIDE CLASSIFICATION:** herbicide

**REGISTERED USE STATUS:** "General Use."

**FORMULATIONS:** Commercial herbicide products generally contain one or more ingredients. An inert ingredient is anything added to the product other than an active ingredient. Because of concern for human health and the environment, EPA announced its policy on toxic inert ingredients in the Federal Register on April 22, 1987 (52FR13305). This policy focuses on the regulation of inert ingredients. EPA's strategy for implementing this policy included the development of four lists of inerts, based on toxicological concerns. Inerts of toxicological concern were placed on List 1. Potentially toxic inerts/high priority for testing were placed on List 2. Inerts of unknown toxicity were placed on List 3, and inerts of minimal concern were placed on List 4.

The inert ingredients of the Oust<sup>®</sup> formulation are not classified by the USEPA as inert ingredients of toxicological concerns to humans or the environment.

The contents of the sulfometuron-methyl formulation are listed below:

Oust<sup>®</sup>

Sulfometuron-methyl	75 %
Inert	25 %

**RESIDUE ANALYTICAL METHODS:** EPA METHOD 632

## II. HERBICIDE USES

---

**REGISTERED FORESTRY, RANGELAND AND RIGHT-OF-WAY USES:** Sulfometuron-methyl as Oust® is registered for use in non-agricultural areas as a general weed and brush control herbicide. For terrestrial use only.

### OPERATIONAL DETAILS:

**TARGET PLANTS:** Sulfometuron-methyl is a selective herbicide primarily for post-emergent control of annual, biennial, and perennial broadleaf weeds and brush. Oust® does have pre-emergent activity.

**MODE OF ACTION:** Sulfometuron-methyl enters the plant through the root zone and foliage, inhibiting the synthesis of key amino acids.

**METHOD OF APPLICATION AND RATES:** Broadcast and spot spray applications at 1/4 ounce to 8 ounces of formulated product per acre. Ground or aerial (helicopter only) application. Do not apply more than 8 ounces/acre/year.

### SPECIAL PRECAUTIONS:

**TIMING OF APPLICATION:** Timing is dependent on the target plant. Application may be made at any time the ground is not frozen. As sulfometuron-methyl must move to the root zone to be effective for pre-emergent control, adequate soil moisture is necessary.

**DRIFT CONTROL:** Care should be exercised not to overspray or apply the herbicide to adjacent non-target areas. Drift control is achieved by observing weather conditions and following label and sprayer instructions. Spray droplet size should be 150 microns or larger.

**RESTRICTIONS/WARNINGS/LIMITATIONS:** Do not enter or allow others to enter the treated area until sprays have dried. Do not apply through any type of irrigation system. Do not apply directly to water or areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply to irrigation banks or other ditch banks. Do not use on lawns. Do not use on walks, driveways, tennis courts, or other impermeable areas. Do not apply to frozen ground. Treated soil should remain undisturbed. Grazing and cut forage restrictions of 12 months post-application apply. This herbicide is injurious to plants at extremely low concentrations. Non-target plants may be adversely affected from drift and run-off. Not for use in California.

## III. ENVIRONMENTAL EFFECTS/FATE

---

### SOIL:

**RESIDUAL SOIL ACTIVITY:** The half-life of sulfometuron-methyl is 20 days.

**ADSORPTION:** The K(oc) of sulfometuron-methyl is 78.

**PERSISTENCE AND AGENTS OF DEGRADATION:** Sulfometuron-methyl is slightly persistent with no major (>10%) degradates.

**METABOLITES/DEGRADATION PRODUCTS AND POTENTIAL ENVIRONMENTAL EFFECTS:** Sulfometuron-methyl degrades to nonphytotoxic, low-molecular-weight compounds and carbon dioxide.

**WATER: SOLUBILITY:** 244 mg/l in water (pH 7).

**POTENTIAL FOR LEACHING INTO SURFACE AND GROUND WATER:** Sulfometuron-methyl is slightly persistent and slightly mobile and has low potential to enter surface waters from runoff. The very low application rate and microbial breakdown suggest that sulfometuron-methyl has little potential to enter ground water.

**AIR: VOLATILIZATION:** Nonvolatile.

**POTENTIAL FOR BYPRODUCTS FROM BURNING OF TREATED VEGETATION:** Not known.

## IV. ECOLOGICAL TOXICITY EFFECTS ON NON-TARGET SPECIES

---

### MICROORGANISMS:

ACUTE CONTACT TOXICITY: LD<sub>50</sub> (honey bee contact) >100 µg/bee

**OVERALL TOXICITY: Practically Non-Toxic**

**PLANTS:** Contact will injure or kill target and non-target plants.

### AQUATIC VERTEBRATES:

ACUTE TOXICITY: LC<sub>50</sub> (rainbow trout 96-hour) >148 mg/l

ACUTE TOXICITY: LC<sub>50</sub> (bluegill sunfish 96-hour) >150 mg/l

**OVERALL TOXICITY: Practically Non-Toxic**

### AQUATIC FRESHWATER INVERTEBRATES:

ACUTE TOXICITY: LC<sub>50</sub> (*Daphnia magna* 48-hour) >150 mg/l

**OVERALL TOXICITY: Practically Non-Toxic**

### AQUATIC ESTUARINE/MARINE INVERTEBRATES:

ACUTE TOXICITY: EC<sub>50</sub> (Eastern oyster larvae 48-hour)

ACUTE TOXICITY: LC<sub>50</sub> (sheepshead minnow 96-hour) >45 mg/l

**OVERALL TOXICITY: Practically Non-Toxic**

### TERRESTRIAL ANIMALS:

AVIAN ACUTE ORAL TOXICITY: LD<sub>50</sub> (bobwhite quail) >5000 mg/kg

AVIAN ACUTE ORAL TOXICITY: LD<sub>50</sub> (mallard duck) >5000 mg/kg

AVIAN SUBACUTE DIETARY TOXICITY: LC<sub>50</sub> (bobwhite quail) >5620 mg/kg

AVIAN SUBACUTE DIETARY TOXICITY: LC<sub>50</sub> (mallard duck) >5000 mg/kg

MAMMAL ACUTE ORAL TOXICITY: LD<sub>50</sub> (rat) >5000 mg/kg

**OVERALL TOXICITY: Practically Non-Toxic**

**BIOACCUMULATION POTENTIAL: No Potential**

**THREATENED AND ENDANGERED SPECIES:** Federally listed plants may be adversely affected if the product is applied directly to the plants.

## V. TOXICOLOGICAL DATA

---

### ACUTE TOXICITY:

**ACUTE ORAL TOXICITY:** LD<sub>50</sub> (rat) >5000 mg/kg

**ACUTE DERMAL TOXICITY:** LD<sub>50</sub> (rabbit) >2000 mg/kg

**PRIMARY SKIN IRRITATION:** Rabbit - Slight Irritant

**PRIMARY EYE IRRITATION:** Rabbit – Moderate Irritant

**ACUTE INHALATION:** LC<sub>50</sub> (rat) >5.1 mg/l

**OVERALL TOXICITY:** Category III – Caution

### CHRONIC TOXICITY:

**CARCINOGENICITY:** No effects reported.

**DEVELOPMENTAL/REPRODUCTIVE:** No effects reported.

**MUTAGENICITY:** Not a mutagenic.

**HAZARD:** The end-use product label for Oust® carries the *Caution* signal word due to eye irritation.

## VI. HUMAN HEALTH EFFECTS

---

### ACUTE TOXICITY (POISONING):

**REPORTED EFFECTS:** Ingestion of large amounts of sulfometuron may cause red cell destruction.

### CHRONIC TOXICITY:

**REPORTED EFFECTS:** Reduced red cell count, increased liver weights, increased white cell count, and anemia reported in test animals at highest doses.

**POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM CONTACTING OR CONSUMING TREATED VEGETATION, WATER OR ANIMALS:** None reported and none expected at application rates.

**POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM INERT INGREDIENTS CONTAINED IN THE FORMULATED PRODUCTS:** None reported.

**HEALTH EFFECTS OF EXPOSURE TO FORMULATED PRODUCTS:** Mild, temporary skin and eye irritation.

**HEALTH EFFECTS ASSOCIATED WITH CONTAMINANTS:** None reported.

**HEALTH EFFECTS ASSOCIATED WITH OTHER FORMULATIONS:** None reported.

## VII. SAFETY PRECAUTIONS

---

### **SIGNAL WORD AND DEFINITION:**

SULFOMETURON-METHYL - **CAUTION** – CAUSES MODERATE EYE IRRITATION

**PROTECTIVE PRECAUTIONS FOR WORKERS:** Applicators and other handlers must wear long-sleeved shirt and long pants, shoes plus socks.

### **MEDICAL TREATMENT PROCEDURES (ANTIDOTES):**

**EYES:** Flush eyes with water; call physician if irritation persists.

**SKIN:** Wash all exposed areas with soap and water; call physician if irritation persists.

**INGESTION:** Immediately give 2 glasses of water and induce vomiting. Call a physician.

**INHALATION:** Remove to fresh air.

**HANDLING, STORAGE AND DISPOSAL:** Store at room temperature or cooler. Do not reuse container. Rinse container and dispose accordingly.

**EMERGENCY SPILL PROCEDURES AND HAZARDS:** Contain and sweep up material of small spills and dispose as waste. Do not contaminate water, food, or feed by storage or disposal.

## VIII. DEFINITIONS

---

**adsorption** – the process of attaching to a surface

**avian** – of, or related to, birds

**CAEPA** – California Environmental Protection Agency

**carcinogenicity** – ability to cause cancer

**CHEMTREC** – Chemical Transportation Emergency Center

**dermal** – of, or related to, the skin

**EC<sub>50</sub>** - median effective concentration during a bioassay

**ecotoxicological** – related to the effects of environmental toxicants on populations of organisms originating, being produced, growing or living naturally in a particular region or environment

**FIFRA** – Federal Insecticide, Fungicide and Rodenticide Act

**formulation** – the form in which the pesticide is supplied by the manufacturer for use

**half-life** – the time required for half the amount of a substance to be reduced by natural processes

**herbicide** – a substance used to destroy plants or to slow down their growth

**Hg** – chemical symbol for mercury

**IARC** – International Agency for Research on Cancer

**K(oc)** – the tendency of a chemical to be adsorbed by soil, expressed as:  $K(oc) = \text{conc. adsorbed}/\text{conc. dissolved}/\% \text{ organic carbon in soil}$

**LC<sub>50</sub>** – the concentration in air, water, or food that will kill approximately 50% of the subjects

**LD<sub>50</sub>** – the dose that will kill approximately 50% of the subjects

**leach** – to dissolve out by the action of water

**mg/kg** – weight ratio expressed as milligrams per kilogram

**mg/l** – weight-to-liquid ratio expressed as milligrams per liter

**microorganisms** – living things too small to be seen without a microscope

**mPa** – milli-Pascal (unit of pressure)

**mutagenicity** – ability to cause genetic changes

**NFPA** – National Fire Protection Association

**NIOSH** - National Institute for Occupational Safety and Health

**NOEL** - no observable effect level

**non-target** – animals or plants other than the ones that the pesticide is intended to kill or control

**OSHA** - Occupational Safety and Health Administration

**Pa – Pascal (unit of pressure)**

**persistence** – tendency of a pesticide to remain to remain in the environment after it is applied

**pesticides** – substances including herbicides, insecticides, rodenticides, fumigants, repellents, growth regulators, etc., regulated under FIFRA

**PPE** – personal protective equipment

**ppm** – weight ratio expressed as parts per million

**residual activity** – the remaining amount of activity as a pesticide

**T&E** – Threatened and Endangered Species (from the Endangered Species Act)

**µg** – micrograms

**volatility** – the tendency to become a vapor at standard temperatures and pressures

## IX. INFORMATION SOURCES

---

Du Pont Agricultural Products, Escort<sup>®</sup>, Oust<sup>®</sup>, Telar<sup>®</sup> Herbicides, Product Information Bulletin, H-66607, June 1996

Du Pont Agricultural Products, Oust<sup>®</sup> Herbicide, Specimen Product Label, H-63401, March 27, 1998

Du Pont Agricultural Products, Oust<sup>®</sup> Herbicide, Specimen Special Local Need 24© Labeling, H-63740, July 2, 1999

Du Pont Agricultural Products, Oust<sup>®</sup> Herbicide, Material Safety Data Sheet M0000028, May 13, 1998

EPRI, Determination of the Effectiveness of Herbicide Buffer Zones in Protecting Water Quality, EPRI Final Report TR-113160, 1999

Extension Toxicology Network, Pesticide Information Profile, Sulfometuron-methyl, Revised June 1996  
<http://ace.orst.edu/info/extoxnet/pips/ghindex.html>

Extension Toxicology Network, Toxicology Information Briefs: Bioaccumulation, Revised 1993,  
<http://ace.orst.edu/info/extoxnet/tibs/bioaccum.htm>

Spray Drift Task Force, A Summary of Ground Application Studies, 1997  
<http://www.agdrift.com/publications/Body.htm>

USDA Forest Service, Pesticide Fact Sheet, Metsulfuron methyl, November 1995  
<http://www.fs.fed.us/foresthealth/pesticide/index.html>

## X. TOXICITY CATEGORY TABLES

TABLE I: HUMAN HAZARDS

Category	Signal Word	Route of Administration			Hazard	
		Acute Oral LD <sub>50</sub> (mg/kg)	Acute Dermal LD <sub>50</sub> (mg/kg)	Acute Inhalation LC <sub>50</sub> (mg/l)	Eye irritation	Skin irritation
I (Highly Toxic)	DANGER (poison)	0-50	0-200	0-0.2	corrosive: corneal opacity not reversible within 7 days	corrosive
II (Moderately Toxic)	WARNING	>50-500	>200-2000	>0.2-2	corneal opacity reversible within 7 days; irritation persisting for 7 days	severe irritation at 72 hours
III (Slightly Toxic)	CAUTION	>500-5000	>2000-20.000	>2-20	no corneal opacity; irritation reversible within 7 days	moderate irritation at 72 hours
IV (Practically Non-toxic)	NONE	>5000	>20,000	>20	no irritation	moderate irritation at 72 hours

After *Pesticide User's Guide*, Ohio State University, Extension Bull. No. 745, 1998.

TABLE II: ECOTOXICOLOGICAL RISKS TO WILDLIFE (TERRESTRIAL AND AQUATIC)

Risk Category	Mammals	Avian	Avian	Fish or Aquatic Invertebrates
	Acute Oral LD <sub>50</sub> (mg/kg)	Acute Oral LD <sub>50</sub> (mg/kg)	Acute Dietary LC <sub>50</sub> (mg/kg)	Acute Concentration LC <sub>50</sub> (mg/l)
Very Highly Toxic	<10	<10	<50	<0.1
Highly Toxic	10-50	10-50	50-500	0.1 – 1
Moderately Toxic	51-500	51-500	501-1,000	>1 – 10
Slightly Toxic	501-2,000	501-2,000	1,001-5,000	>10 – 100
Practically Non-toxic	>2,000	>2,000	>5,000	>100

Table II created from information contained in *Pesticides and Wildlife*, Whitford, Fred, et al., Purdue University Cooperative Extension Service PPP-30, 1998.

**Disclaimers and Other Legal Information:**

Mention of a trademark, vendor, technique, or proprietary product does not imply or constitute an endorsement of the product by the United States Department of Energy - Bonneville Power Administration (USDOE-BPA), its employees, and its contractors, and does not imply or endorse any product to the exclusion of others. In all cases, the user is required by law to follow all pesticide label instructions and restrictions.

This document is copyrighted by the USDOE-BPA. USDOE-BPA retains all rights under all conventions, but permits free reproduction by all providing that full credit is given to USDOE-BPA in citing this publication, sources and date of publication, and, that such reproduction is not distributed or redistributed for profit.

**This fact sheet was prepared by USDOE-Bonneville Power Administration, March 2000.**